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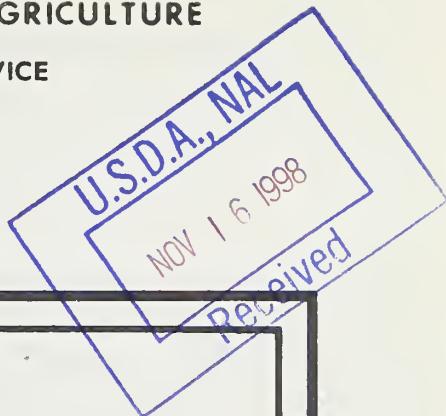
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UNITED STATES STANDARDS

for grades of

FROZEN SPINACH



EFFECTIVE SEPTEMBER 7, 1964

Sixth Issue
As Amended

These standards supersede the standards
which have been in effect since
March 7, 1961

This is the sixth issue, as amended, of the United States Standards for Grades of Frozen Spinach. These amended standards are issued by the Department after careful consideration of all data and views submitted.

These standards were published in the Federal Registers of January 20, 1961 (26 F.R. 578), and January 27, 1961 (26 F.R. 821), to become effective on March 7, 1961. They were amended in § 52.1922, § 52.1927, and § 52.1928 effective September 7, 1964 (29 F.R. 11442).

As is the case of other standards for processed fruits and vegetables, these standards are designed to serve as a convenient basis for sales, for establishing quality control programs, and for determining loan values. They will also serve as a basis for the inspection of this commodity by Federal inspection service, which is available for the inspection of other processed products as well.

The Department welcomes suggestions which might aid in improving these standards in future revisions. Comments may be submitted to, and copies of these standards obtained from:

Chief, Processed Products Standardization
and Inspection Branch
Fruit and Vegetable Division, AMS
U.S. Department of Agriculture
Washington, D. C. 20250

UNITED STATES STANDARDS FOR GRADES OF FROZEN SPINACH¹

Effective September 7, 1964

PRODUCT DESCRIPTION, STYLES, AND GRADES

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AUTHORITY: §§ 52.1921 to 52.1931 issued under secs. 202-208, 60 Stat. 1087, as amended; 7 U.S.C. 1621-1627.

PRODUCT DESCRIPTION, STYLES, AND GRADES

§ 52.1921 Product description.

Frozen spinach is the frozen product prepared from the whole or cut, clean, sound, succulent leaves and stems of fresh spinach by sorting, trimming, washing, and proper blanching and draining of such leaves and stems. The product is then frozen in accordance with good commercial practices and maintained at temperatures necessary for the preservation of the product.

§ 52.1922 Styles of frozen spinach.

(a) "Whole leaf" spinach is the style of frozen spinach that consists sub-

stantially of the leaf and adjoining portion of the stem.

(b) "Chopped" spinach is the style of frozen spinach that consists of the leaf and adjoining portion of the stem which has been cut or chopped predominantly into small pieces less than approximately $\frac{3}{4}$ inch in the longest dimension.

(c) "Cut leaf (or Sliced)", hereinafter referred to as "cut leaf", spinach is the style of frozen spinach that consists of the leaf and adjoining portion of the stem which has been cut predominantly into large pieces approximating $\frac{3}{4}$ inch or more in the longest dimension.

§ 52.1923 Grades of frozen spinach.

(a) "U.S. Grade A" (or "U.S. Fancy") is the quality of frozen spinach that possesses a good flavor; that possesses a good color; that is practically free from defects; that possesses a good character; and that scores not less than 90 points when scored in accordance with the scoring system outlined in this subpart.

(b) "U.S. Grade B" (or "U.S. Extra Standard") is the quality of frozen spinach that possesses a reasonably good flavor; that possesses a reasonably good color; that is reasonably free from defects; that possesses a reasonably good character; and that scores not less than 80 points when scored in accordance with the scoring system outlined in this subpart.

(c) "Substandard" is the quality of frozen spinach that fails to meet the requirements of U.S. Grade B.

FACTORS OF QUALITY

§ 52.1924 Ascertaining the grade.

(a) In addition to considering other requirements outlined in the standards the following quality factors are evaluated:

¹ Compliance with the provisions of these standards shall not excuse failure to comply with the provisions of the Federal Food, Drug, and Cosmetic Act or with applicable State laws and regulations.

(1) *Factor not rated by score points.*
 (i) Flavor;

(2) *Factors rated by score points.*
 The relative importance of each factor which is rated is expressed numerically on the scale of 100. The maximum number of points that may be given such factors are:

Factors:	Points
Color -----	20
Defects -----	60
Character-----	20
Total score-----	100

(b) The score for the factors of color and defects is determined immediately after thawing to the extent that the product is substantially free from ice crystals and can be handled as individual units. The evaluation of the factors of character and flavor of frozen spinach is made after thawing and after the product is cooked.

(c) "Good flavor" means that the product has a good characteristic, normal flavor and odor and is free from objectionable flavors and objectionable odors of any kind.

(d) "Reasonably good flavor" means that the product may be lacking good flavor and odor but is free from objectionable flavors and objectionable odors of any kind.

§ 52.1925 Ascertaining the score for the factors which are rated.

The essential variations within each factor which is rated are so described that the value may be ascertained for each factor and expressed numerically. The numerical range within each factor which is rated is inclusive (for example, "18 to 20 points" means 18, 19, or 20 points).

§ 52.1926 Color.

(a) (A) *classification.* Frozen spinach that possesses a good color may be given a score of 18 to 20 points. "Good color" means that the frozen spinach possesses a bright, characteristic good green color; that yellow-green leaves, or portions thereof, or discolored leaves and stems, or portions thereof, which may be

present do not materially affect the color appearance of the product.

(b) (B) *classification.* Frozen spinach that possesses a reasonably good color may be given a score of 16 or 17 points. Frozen spinach that falls into this classification shall not be graded above U.S. Grade B, regardless of the total score for the product (this is a limiting rule). "Reasonably good color" means that the frozen spinach possesses a characteristic green color that may be dull but is not off color; that yellow-green leaves, or portions thereof, or discolored leaves and stems, or portions thereof, which may be present do not seriously affect the color appearance of the product.

(c) (SStd.) *classification.* Frozen spinach that fails to meet the requirements of paragraph (b) of this section may be given a score of 0 to 15 points and shall not be graded above Substandard, regardless of the total score for the product (this is a limiting rule).

§ 52.1927 Defects.

(a) *General.* The factor of defects refers to the degree of freedom from grit, sand, or silt; from harmless extraneous vegetable material, seed heads, root stubs, crowns, and damaged leaves and stems or portions thereof. Yellow-green leaves which are not otherwise damaged are not considered under the factor of defects but are scored under the factor of color.

(b) *Definitions of terms.* (1) "Aggregate area" means the aggregated damaged areas of leaves, stems, or portions thereof, when placed in a contiguous position with practically no intervening spaces.

(2) "Grit, sand, or silt" means particles of any earthy material.

(3) "Harmless extraneous vegetable material" means:

(i) *Group I.* Green, fine, tender string-like blades and stems of grass and weeds;

(ii) *Group II.* Green, coarse grass and weeds; and

(iii) *Group III.* Grass and weeds other than green.

(4) "Seed head" means the seed bearing portion of a spinach plant that is longer than one inch or that is objectionable in appearance.

(5) "Root stub" means any portion of the root whether or not leaves are attached.

(6) "Crown" means the solid area of a spinach plant between the root and attached leaf or cluster of leaves.

(7) Damage in the varying degrees has the following meanings with respect to the following styles:

(i) *Whole leaf.* (a) "Insignificant damage" means transparent areas not associated with discoloration of any kind that in the aggregate are not more than $\frac{1}{2}$ square inch (equivalent to $\frac{1}{2}$ inch x 1 inch) on a leaf; and discoloration or other injury including transparent areas associated with discoloration that in the aggregate is not more than $\frac{3}{32}$ square inch (equivalent to $\frac{1}{4}$ inch x $\frac{3}{8}$ inch) on a leaf or stem or portion thereof: *Provided*, That such transparent areas, discoloration or other injury does not materially affect the appearance or eating quality of the unit.

(b) "Minor damage" means damage by discoloration or other injury including transparent areas associated with discoloration which covers an aggregate area of more than $\frac{3}{32}$ square inch but less than 1 square inch (equivalent to 1 inch x 1 inch) on a leaf or stem or portion thereof; transparent areas not associated with discoloration when such transparent area is more than $\frac{1}{2}$ square inch but less than 1 square inch; or damage which covers an aggregate area of $\frac{3}{32}$ square inch or less on a leaf or stem or portion thereof that materially affects the appearance or eating quality of the unit.

(c) "Major damage" means damage by discoloration or other injury which covers an aggregate area of 1 square inch or more, but not more than 4 square inches (equivalent to 4 inches x 1 inch) on a leaf or stem or portion thereof; or damage less than 1 square inch when such damage seriously affects the appearance or eating quality of the unit.

(d) "Severe damage" means damage by discoloration or other injury which

covers an aggregate area of more than 4 square inches on a leaf or stem or portion thereof.

(ii) *Chopped; cut leaf.* (a) "Insignificant damage" means transparent areas on a portion of leaf not associated with discoloration of any kind when such transparent portion is not more than $\frac{1}{2}$ square inch; and any discoloration that does not materially affect the appearance or eating quality of the unit.

(b) "Damage" means any area of discoloration or other injury, including transparent areas associated with discoloration, on a portion of leaf or stem that materially affects the appearance or eating quality of the unit; and transparent areas whether or not associated with discoloration when such transparent area is more than $\frac{1}{2}$ square inch.

(c) (A) *classification.* Frozen spinach that is practically free from defects may be given a score of 54 to 60 points. "Practically free from defects" means that no grit, sand, or silt may be present that affects the appearance or eating quality of the product; and in addition has the following meanings with respect to the following styles:

(1) *Whole leaf style.* The product does not exceed the applicable allowances prescribed for the respective type of defect in Table I and Table II of this section;

(2) *Chopped.* The area of damage does not exceed the area prescribed for the applicable sample size in Table III of this section;

(3) *Cut leaf.* The area of damage does not exceed the area prescribed for the applicable sample size in Table IV of this section;

(4) *All styles.* Notwithstanding the specified allowances, the presence of harmless extraneous vegetable material, root stubs, seed heads, crowns, damaged leaves and stems, or portions thereof, including insignificant damage or other injury, individually or collectively, does not materially affect the appearance or eating quality of the product.

(d) (B) *classification.* Frozen spinach that is reasonably free from defects may be given a score of 48 to 53 points. Frozen spinach that falls into this clas-

sification shall not be graded above U.S. Grade B, regardless of the total score for the product (this is a limiting rule). "Reasonably free from defects" means that a trace of grit, sand, or silt may be present that does not materially affect the appearance or eating quality of the product; and in addition has the following meanings with respect to the following styles:

(1) *Whole leaf style.* The product does not exceed the applicable allowances prescribed for the respective type of defect in Table I and Table II of this section;

(2) *Chopped.* The area of damage does not exceed the area prescribed for the applicable sample size in Table III of this section;

(3) *Cut leaf.* The area of damage does

not exceed the area prescribed for the applicable sample size in Table IV of this section;

(4) *All styles.* Notwithstanding the specified allowances, the presence of harmless extraneous vegetable material, root stubs, seed heads, crowns, damaged leaves and stems, or portions thereof, including insignificant damage or other injury, individually or collectively, does not seriously affect the appearance or eating quality of the product.

(e) (*SStd.*) *classification.* Frozen spinach that fails to meet the requirements of paragraph (d) of this section may be given a score of 0 to 47 points and shall not be graded above Substandard, regardless of the total score for the product (this is a limiting rule).

TABLE I—SUMMARY OF ALLOWANCES FOR CERTAIN DEFECTS IN WHOLE LEAF STYLE SPINACH

Grade classification	Maximum allowances					
	Each 10 ounces net weight			Each 48 ounces net weight		
	Damaged leaves			Seed heads	Crowns	Root stubs
	Minor	Major	Severe			
A-----	6	0	0	1	1	1
	4	1	0			
	2	2	0			
	2	0	1			
B-----	12	0	0	3	3	3
	10	1	0			
	8	2	0			
	8	0	1			
	6	3	0			
	6	1	1			
	4	0	2			
	2	1	2			
SStd-----	0	2	2			
	Fails to meet foregoing requirements for Grade B classification.					

TABLE II—SUMMARY OF ALLOWANCES FOR HARMLESS EXTRANEous VEGETABLE MATERIAL IN WHOLE LEAF STYLE SPINACH

Grade classification	Group	Per sample unit—Provided, the average for all the sample units in the sample does not exceed the allowance for such average		Average for all sample units in the sample
		20 ounces net weight or less	More than 20 ounces net weight	
A	I.....	Pieces aggregating 0.8 inch per 1 ounce; or 1 piece.		Total aggregate length of 0.4 inch per 1 ounce but no more than 0.1 inch per 1 ounce of Group II.
	II..... or III.....	Pieces aggregating 4 inches; or 1 piece.	Pieces aggregating 0.2 inch per 1 ounce; or 1 piece.	
	I and II combined.	Total aggregate of 0.8 inch per 1 ounce; but no more than 4 inches of Group II.	Total aggregate of 0.8 inch per 1 ounce but no more than 0.2 inch per 1 ounce of Group II.	
	III.....	None.....	None.....	
B	I.....	Pieces aggregating 1.2 inch per 1 ounce; or 1 piece.		Total aggregate length of 0.6 inch per 1 ounce but no more than 0.2 inch per 1 ounce of Group II and Group III.
	II..... or III.....	Pieces aggregating 8 inches; or 1 piece.	Pieces aggregating 0.4 inch per 1 ounce; or 1 piece.	
	III..... or I, II, and III combined.	Pieces aggregating 8 inches; or 1 piece.	Pieces aggregating 0.4 inch per 1 ounce; or 1 piece.	
	I, II, and III combined.	Total aggregate of 1.2 inch per 1 ounce but no more than 8 inches of Group II and Group III.	Total aggregate of 1.2 inch per 1 ounce but no more than 0.4 inch per 1 ounce of Group II and Group III.	
	SStd	Fails to meet foregoing requirements for Grade B classification.		

TABLE III—SUMMARY OF ALLOWANCES FOR DAMAGE IN CHOPPED STYLE SPINACH

Sample size	Area of damaged portions of leaves				
Initial 2 ounces.....	17/16 square inches or less pass for A	18/16 to 22/16 square inches inclusive take additional 1 ounce	23/16 to 37/16 square inches inclusive pass for B	38/16 to 42/16 square inches inclusive take additional 1 ounce	More than 42/16 square inches fails grade B
Cumulative 3 ounces.....	30/16 square inches or less pass for A	31/16 to 60/16 square inches pass for B	More than 60/16 square inches fails grade B		

TABLE IV—SUMMARY OF ALLOWANCES FOR DAMAGE IN CUT LEAF STYLE SPINACH

Sample size	Area of damaged portions of leaves				
Initial 4 ounces	$\frac{3}{2}\frac{1}{16}$ square inch or less—Pass for A.	$\frac{3}{3}\frac{1}{16}$ to $\frac{37}{4}\frac{1}{16}$ square inch inclusive—Take another 2 ounces.	$\frac{38}{4}\frac{1}{16}$ to $\frac{67}{4}\frac{1}{16}$ square inch inclusive—Pass for B.	$\frac{68}{4}\frac{1}{16}$ to $\frac{73}{4}\frac{1}{16}$ square inch inclusive—Take another 2 ounces.	More than $\frac{72}{4}\frac{1}{16}$ square inch—Fails Grade B.
Cumulative 6 ounces.	$\frac{59}{4}\frac{1}{16}$ square inch or less—Pass for A.	$\frac{51}{4}\frac{1}{16}$ to $\frac{102}{4}\frac{1}{16}$ square inch inclusive—Pass for B.	More than $\frac{102}{4}\frac{1}{16}$ square inch—Fails Grade B.		

§ 52.1928 Character.

(a) *General.* The factor of character refers to the tenderness of the leaves and stems, or portions thereof, the relation of stem to leaf material, and the degree of freedom from pieces of leaves and shredded portions of leaves and stems.

(1) "Stem material" means that portion of the spinach material below the point of attachment to the leaf.

(2) "Pieces of leaf" means any piece of a leaf (excluding stem material) having an area less than 2 square inches in Whole Leaf style.

(b) (A) *classification.* Frozen spinach that possesses a good character may be given a score of 18 to 20 points. "Good character" has the following meanings with respect to the following styles:

(1) *Whole Leaf style.* (i) The spinach is tender; and there may be present:

(ii) Not more than 25 percent, by weight, of the spinach may be stem material; and

(iii) Not more than 20 percent, by weight, of the spinach that may be pieces of leaves.

(2) *Cut leaf; chopped.* (i) The spinach is tender; and

(ii) The appearance and eating quality of the product is not materially affected by the presence of stem material or that the product does not present a pureed or stringy appearance.

(c) (B) *classification.* Frozen spinach that possesses a reasonably good character may be given a score of 16 or 17 points. Frozen spinach that falls into

this classification shall not be graded above U.S. Grade B, regardless of the total score for the product (this is a limiting rule). "Reasonably good character" has the following meanings with respect to the following styles:

(1) *Whole leaf style.* (i) The spinach is reasonably tender; and there may be present:

(ii) Not more than 30 percent, by weight, of the spinach that is stem material; and

(iii) Not more than 30 percent, by weight, of the spinach that is pieces of leaves.

(2) *Cut leaf; chopped.* (i) The spinach is reasonably tender; and

(ii) The appearance and eating quality of the product is not seriously affected by the presence of stem material.

(d) (SStd.) *classification.* Frozen spinach that fails to meet the requirements of paragraph (c) of this section may be given a score of 0 to 15 points and shall not be graded above Substandard, regardless of the total score for the product (this is a limiting rule).

METHOD OF ANALYSIS

§ 52.1929 Method of analysis.

(a) "Weight of stem material" and "weight of pieces of leaves" are determined by the following method:

(1) *Equipment.*

8 inch, 8 mesh screen.

Flat surface suitable as cutting board.

Small knife.

Suitable scales.

(2) *Procedure.* (i) If the sample is 10 ounces or less use the entire sample, but if the sample is of a size exceeding 10 ounces, use a representative portion which will yield at least 10 ounces of drained spinach.

(ii) Place sample in deep grading tray and add water to a depth of approximately 1 inch. Separate leaves for defects and at the same time separate pieces of leaves and stem material, cutting the stem from the leaf at the lowest point of attachment. After separating, place whole leaves, pieces of leaves, and stem material on the sieve in separate piles, drain for two minutes, weigh, and record total combined weights. Determine weight of stem material and pieces of leaves separately. The weight of stem material divided by the total combined weights multiplied by 100 is the percent, by weight, of stem material. The weight of pieces of leaves divided by the total combined weights multiplied by 100 is the percent, by weight, of pieces of leaves.

SCORE SHEET
**§ 52.1931 Score sheet for frozen
spinach.**

Container size							
Container code or marking							
Label							
Net Weight (ounces)							
Style							
Stem material (percent)							
Pieces of leaves (percent)							
Factors	Score points							
Color	20	<table> <tr> <td>{(A)</td><td>18-20</td></tr> <tr> <td>{(B)</td><td>16-17</td></tr> <tr> <td>{(SStd.)</td><td>10-15</td></tr> </table>	{(A)	18-20	{(B)	16-17	{(SStd.)	10-15
{(A)	18-20							
{(B)	16-17							
{(SStd.)	10-15							
Defects	60	<table> <tr> <td>{(A)</td><td>54-60</td></tr> <tr> <td>{(B)</td><td>48-53</td></tr> <tr> <td>{(SStd.)</td><td>10-47</td></tr> </table>	{(A)	54-60	{(B)	48-53	{(SStd.)	10-47
{(A)	54-60							
{(B)	48-53							
{(SStd.)	10-47							
Character	20	<table> <tr> <td>{(A)</td><td>18-20</td></tr> <tr> <td>{(B)</td><td>16-17</td></tr> <tr> <td>{(SStd.)</td><td>10-15</td></tr> </table>	{(A)	18-20	{(B)	16-17	{(SStd.)	10-15
{(A)	18-20							
{(B)	16-17							
{(SStd.)	10-15							
Total score	100							
Grade							
Flavor and odor							

¹ Indicates limiting rule.

The United States Standards for Grades of Frozen Spinach (which is the sixth issue) contained in this subpart shall become effective 30 days after the date of publication hereof in the FEDERAL REGISTER, and thereupon will supersede the United States Standards for Grades of Frozen Spinach (7 CFR Part 52) which have been in effect since March 7, 1961.

Dated: August 4, 1964.

ROY W. LENNARTSON,
Deputy Administrator,
Marketing Services.



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